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(11) **EP 1 129 441 B1**

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
14.05.2003 Bulletin 2003/20

(21) Application number: **99971952.9**

(22) Date of filing: **11.11.1999**

(51) Int Cl.7: **G08B 13/22, E05B 49/00**

(86) International application number:
PCT/ZA99/00120

(87) International publication number:
WO 00/028499 (18.05.2000 Gazette 2000/20)

(54) **SECURITY CONTROL SYSTEM**
SICHERHEITSKONTROLLSYSTEM
SYSTEME DE COMMANDE DE SECURITE

(84) Designated Contracting States:
DE FR GB IT

(30) Priority: **11.11.1998 ZA 9810293**

(43) Date of publication of application:
05.09.2001 Bulletin 2001/36

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Description

BACKGROUND OF THE INVENTION

[0001] This invention relates generally to a security system and is more particularly concerned with control means for enhancing the effectiveness of a security system.

[0002] The use of radio transmitters in vehicles for the remote operation of doors and gates is widespread. A transmitter is used for transmitting a control signal, which is normally encoded, to a remote receiver. If the received signal is validated at the receiver an actuating mechanism is used to open a gate, or a door such as a garage door.

[0003] A recent development has been the mounting of the transmitter into a control panel or fascia on a vehicle in a non-obtrusive manner, substantially in the form of original equipment. For example a radio transmitter may be mounted in a sunvisor of a vehicle or in a housing in a door panel. This type of approach does result in a neat and attractive appearance and it becomes, for practical purposes, impossible to misplace a transmitter. On the other hand if the vehicle is stolen or if the transmitter is removed from the vehicle in which it is installed, in an unauthorised manner, it is possible for an intruder who is then in possession of the vehicle or transmitter to operate the respective gate or door, as the case may be, and so gain access to premises which are otherwise protected.

[0004] From DE 197 35 658 C a security control system is known which includes transmitter means for transmitting a control signal to a remote receiver, monitoring means for monitoring at least one installation to detect at least one designated event, signal generating means, responsive to the monitoring means for generating a first signal when a designated event is detected and inhibiting means responsive to the first signal for inhibiting the recognition of the code of the transmitter as valid whereby the receiver of the control signal is set to inhibit recognition of the control signal.

SUMMARY OF INVENTION

[0005] The invention provides a security control system which includes transmitter means for transmitting a control signal to a remote receiver, monitoring means for monitoring at least one installation to detect at least one designated event, signal generating means, responsive to the monitoring means for generating a first signal when a designated event is detected, and inhibiting means, responsive to the first signal, for inhibiting the transmission of the control signal.

[0006] The control system may include display means for displaying information relating to the monitoring means.

[0007] The designated event may be an unauthorized event, eg. theft from a vehicle or building, or unauthor-

ised access to a vehicle or building. The designated event may otherwise be a permitted event, eg. a locking or enabling signal, which is used, at least, to change the mode of operation of the control system.

[0008] The installation which is monitored may vary according to requirement. For example at least one installation may be a vehicle and the monitoring means may monitor the vehicle to detect unauthorised access to the vehicle or the unauthorised removal of the transmitting means. If either of these events is detected then the transmission of the control signal is inhibited. Alternatively or additionally a security installation such as, for example, an intruder detection system at fixed premises eg. an apartment, house or office block, may be monitored and when an unauthorised event is detected, or when the non-occurrence of a designated or authorized event is detected, then the said first signal is generated.

[0009] Conversely, the transmitter means for transmitting the control signal to the remote receiver may only be enabled if access to the vehicle takes place in an authorised manner. Authorised access, in this sense, may include any specified occurrence or occurrences such as opening a door with a key, opening a door with a transmitted signal, inputting a code, for example via a keyboard, to the monitoring means, or any equivalent technique.

[0010] Thus, on the one hand, the transmitter means or the said remote receiver may be rendered operative only when an authorised event is detected or, on the other hand, the transmitter means or the said remote receiver may be rendered inoperative when an unauthorised event is detected.

[0011] The said remote receiver may be used for actuating the movement of a door or a gate or for actuating any other apparatus or device.

[0012] The monitoring means may monitor more than one installation.

[0013] The monitoring means may monitor a building and this may be in place of, or in addition to, the monitoring of a vehicle.

[0014] It thus becomes possible, through the use of a suitable interlocking arrangement, to provide a signal on the display means which indicates the status of a security system in a building. If the security system has been breached then the operation of the control signal may be inhibited, or a signal indicating the type of breach may be transmitted to any appropriate party e.g. the lawful user, or owner, of the building.

[0015] For example: a car is fitted with a universal type transmitter located in its internal rear view mirror (such as the Homelink™ product by Prince). A gate or garage at the house of the vehicle's owner is fitted with a gate opener or a garage door opener (GDO) (such as a suitable Genie™ product). The vehicle is equipped with a remote keyless entry (RKE) system (based e.g. on the Keeloq™ system). According to the present invention, the transmitter inside the vehicle which would normally

be learnt into the GDO system and then used to activate the gate or garage door opener, would be inhibited once the vehicle doors are locked with the RKE system and would only then reactivate upon reception of a valid command by the vehicle RKE system to open.

[0016] In a further enhancement the building may be fitted with an alarm system that will be capable of communicating its state such as an alarm condition to a control unit eg. installed in a car through any appropriate medium such as a wireless communication.

BRIEF DESCRIPTION OF THE DRAWING

[0017] The invention is further described by way of example with reference to the accompanying drawing which is a block diagram of a security control system according to one form of the invention.

DESCRIPTION OF PREFERRED EMBODIMENT

[0018] The accompanying drawing illustrates in block diagram form a security control system 10 according to the invention.

[0019] The system includes a control unit 12 which is enclosed in dotted outline and which, in use, is installed in or on a vehicle, a device 14 for operating a gate or door, according to requirement, eg. a garage door opener, and an intruder detection system 16.

[0020] The control unit 12 is installed, as original or semi-permanent equipment, in a vehicle, with suitable control buttons at unobtrusive positions inside the vehicle. The control buttons may for example be positioned on a rear side of a sunvisor, on a control plate in a door panel, on a fascia or the like. These aspects are not important to an understanding of the invention. The control unit includes a transmitter 18, a receiver 20, a suitably programmed microprocessor-based control device 22, a display 24 and a monitor or security system 26.

[0021] The system 26 may be of any suitable kind which is known in the art. The system may be, or include a device, similar to the Homelink™ product referred to hereinbefore. The system 26 is used to protect the vehicle against theft, unauthorised access or the like. Typically, merely by way of example, the system 26 is responsive to the reception of an encoded signal and if the encoded signal is correctly identified the vehicle may be started and driven. The encoded signal may be generated in any appropriate way eg. by using an authorised, variable code, transmitter. On the other hand if unauthorised opening of a vehicle door takes place or if an attempt is made to start the vehicle without the correct encoded signal having been received then operation of the vehicle is inhibited in a variety of ways which are known in the art. More generally, the system is enabled by an authorised event or events, and is disabled by one or more unauthorised events. As indicated in the preamble hereto the system 26 may be enabled when a vehicle is entered using an RKE system. If this system

is not used then the transmitter is not able to generate a signal for reception by the receiver 28.

[0022] The operating device 14 includes a receiver 28 and an actuator 30. The actuator is also of a type which is known in the art and for example includes an electrical motor with a suitable control mechanism which is used for opening a door such as a door to a garage in which a vehicle may be housed. The invention is not limited in this regard and, generally, the actuator is any mechanism which is caused to operate upon receipt of a correct signal by the receiver.

[0023] The detection system 16 includes a monitoring arrangement 32 designed to detect unauthorised entry to premises, such as a house, in which the detection system 16 is installed. The system 16 may be of any appropriate kind and may be custom designed for the purpose. However it falls within the scope of the invention to make use of conventional, or already installed, systems such as commercially available house alarms or intruder detection systems. Such systems can easily be adapted, or retro-fitted, to be incorporated in or to work together with the security control system of the invention. The arrangement 32 interacts with a transmitter 34 and a receiver 36. The arrangement 32 is enabled, or disabled, when an encoded signal is received by the receiver 36 and is correctly identified. If the arrangement 32 is enabled and an unauthorised event takes place then the transmitter 34 is used in any appropriate way, for example to generate a warning signal or to summon assistance from a response service.

[0024] Referring again to the control unit 12 if a person gains unauthorised access to the vehicle in which the unit is installed or, more generally, carries out any unauthorised act, then this event is detected by the monitor system 26 which then activates the control device 22 to generate a signal 38 which inhibits operation of the transmitter 18. Thus the appropriate signal required to initiate the operation of the actuator 30 cannot be generated, and hence cannot be received by the receiver 28.

[0025] In a similar manner if the transmitter 18 is removed from the vehicle in which it is installed then the transmitter is not enabled unless authorised entry to the vehicle is gained. This however is not possible as the transmitter 18 or, more likely, the control unit 12, has been removed from the vehicle, for the monitor system does not detect authorised access, or alternatively detects an unauthorised event. Once again the transmission of the signal by the transmitter 18, which is required to initiate operation of the actuator 30, is inhibited. The transmitter may be disableable, in this way, using any suitable technique. For example a keyword or code, required to operate the transmitter, may be changed automatically if the transmitter is tampered with, in any way, or if the transmitter is removed from the vehicle in which it is installed.

[0026] The operation of the security control system may optionally be enhanced by making the receiver 20

responsive to a signal transmitted by the transmitter 34. [0027] Assume for example that the security system 32 has detected a breach of security in the building in which the detection system 16 is installed. An appropriate signal is transmitted by the transmitter 34 at regular intervals. When the vehicle comes within range of the transmitted signal then the transmitted signal is received by the receiver 20 and an appropriate "security breach" status signal is displayed on the display 24. The driver of the vehicle is thereby automatically alerted, when the vehicle is within a predetermined range of the building, to the occurrence of the unauthorised event. Alternatively the system 32 is automatically interrogated by the transmitter 18, when the vehicle comes within range of the system and, in response to the interrogating signal, a security status signal is transmitted by the transmitter 34.

[0028] It is possible, in addition to displaying the security status signal, and in a manner analogous to what has been described, to inhibit the transmission, by the transmitter 18, of the control signal which is used for initiating operation of the actuator 30.

[0029] It is to be understood that the operation of the transmitter 18 may be inhibited when any one or more of a plurality of occurrences take place. Thus the operation of the transmitter may be inhibited if the transmitter is removed from a vehicle, if unauthorised access is obtained to the vehicle, if any other unauthorised event takes place on or in connection with the vehicle, or if an unauthorised event takes place at an installation which is remote from the vehicle.

[0030] In a variation of the invention, an attempt to operate the transmitter 18 after a designated event has taken place causes the transmission, preferably continuously, of a signal which can be used to identify the location of the transmitter and hence, if the transmitter is still installed in the vehicle, of the location of the vehicle. This enables steps to be taken to recover the vehicle, if it has been stolen.

Claims

1. A security control system (10) which includes transmitter means (18) for transmitting a control signal to a remote receiver (20, 28, 36), monitoring means (26, 32) for monitoring at least one installation to detect at least one designated event, signal generating means (22), responsive to the monitoring means, for generating a first signal when a designated event is detected, and inhibiting means (38), responsive to the first signal, for inhibiting the transmission of the control signal.
2. A security control system (10) according to claim 1 which includes display means (24) for displaying information relating to the monitoring means.

3. A security control system (10) according to claim 1 or 2 wherein the monitoring means (26) monitors a vehicle to detect unauthorised access to the vehicle or the unauthorised removal of the transmitting means (18) from the vehicle.
4. A security control system (10) according to claim 1 or 2 wherein the monitoring means (26) monitors a vehicle to detect unauthorised access to the vehicle and, when authorised access is detected, the monitoring means enables the transmitter means (18).
5. A security control system (10) according to any one of the claims 1 to 4 wherein the monitoring means (32) monitors a building to detect the occurrence of an unauthorised event in the building.
6. A security control system (10) according to any one of the claims 1 to 5 wherein the said remote receiver (28) is used for activating a device (30).
7. A security control system (10) according to claim 6 wherein the said remote receiver (28) is used for activating movement of a door or gate (30).
8. A security control system (10) according to claim 1 wherein the transmitter means (18) is located in a vehicle, the remote receiver (28) is used to control the operation of a garage door opener or gate opener (30) and the designated event is the locking of doors of the vehicle.
9. A security control system (10) according to claim 8 wherein, when the vehicle's doors are unlocked, the transmitter means (18) is enabled so that, when required, the transmitter means (18) can transmit the control signal.
10. A security control system (10) according to claim 8 or 9 which includes display means (24), and wherein the monitoring means (32) monitors the security status of a building, the display means, at least when the vehicle is within a predetermined range of the building, providing a display of the said security status.
11. A security control system (10) according to claim 8 or 9 wherein the monitoring means (32) monitors the security status of a building and, when the vehicle is within a predetermined range of the building, and if the security status has been breached, the inhibiting means (38) inhibits the transmission of the said control signal.
12. A security control system (10) which includes a transmitter (18) on a vehicle, a receiver (28) at a fixed installation which, in response to a signal from the transmitter, activates a device (30), and moni-

toring means (32) which, upon detecting the occurrence of at least one designated event, inhibits operation of the transmitter.

Patentansprüche

1. Ein Sicherheits- Kontrollsystem (10) welches aufweist: Übertragungsvorrichtung (18) um ein Kontrollsignal zu einem räumlich entfernten Empfänger (20, 28, 36) zu übertragen, Überwachungsvorrichtung (26, 32) um mindestens eine Anlage zu überwachen um mindestens ein bestimmtes Ereignis wahrzunehmen, Signalerzeugungs- Vorrichtung (22) die auf die Überwachungsvorrichtung anspricht um ein erstes Signal zu erzeugen wenn ein bestimmtes Ereignis wahrgenommen wird, und Blockierungsvorrichtung (38) die auf das erste Signal anspricht um die Übertragung des Kontrollsignals zu blockieren.
2. Ein Sicherheits- Kontrollsystem (10) gemäß Anspruch 1 das eine Vorrichtung (24) zur Anzeige von Information im Zusammenhang mit der Überwachungsvorrichtung einschließt.
3. Ein Sicherheits- Kontrollsystem (10) gemäß Anspruch 1 oder 2 in dem die Überwachungsvorrichtung (26) ein Fahrzeug überwacht um unbefugten Zugang zu dem Fahrzeug oder die unbefugte Entfernung der Übertragungsvorrichtung (18) von dem Fahrzeug wahrzunehmen.
4. Ein Sicherheits- Kontrollsystem (10) gemäß Anspruch 1 oder 2 in dem die Überwachungsvorrichtung (26) ein Fahrzeug überwacht um unbefugten Zugang zu dem Fahrzeug wahrzunehmen und, wenn befugter Zugang wahrgenommen wird, die Überwachungsvorrichtung die Übertragungsvorrichtung (18) funktionsfähig macht.
5. Ein Sicherheits- Kontrollsystem (10) gemäß einem der Ansprüche 1 bis 4 in welchem die Überwachungsvorrichtung (32) ein Gebäude überwacht um das Stattfinden eines unerlaubten Ereignisses in dem Gebäude festzustellen.
6. Ein Sicherheits- Kontrollsystem (10) gemäß einem der Ansprüche 1 bis 5 in welchem der besagte räumlich entfernte Empfänger (28) zur Aktivierung einer Vorrichtung (30) verwendet wird.
7. Ein Sicherheits- Kontrollsystem (10) gemäß Anspruch 6 in welchem der besagte räumlich entfernte Empfänger (28) verwendet wird um eine Tür oder ein Tor (30) in Bewegung zu setzen.
8. Ein Sicherheits- Kontrollsystem (10) gemäß An-

spruch 1 bei welchem die Übertragungsvorrichtung (18) sich in einem Fahrzeug befindet, der räumlich entfernte Empfänger (28) verwendet wird um die Betätigung eines Garagentor-Öffners oder eines Tor- Öffners (30) zu steuern und das bestimmte Ereignis das Schließen der Türen des Fahrzeuges ist.

9. Ein Sicherheits- Kontrollsystem (10) gemäß Anspruch 8 bei welchem, wenn die Wagentüren aufgeschlossen werden, die Übertragungsvorrichtung (18) aktiviert wird sodaß, wenn erforderlich, die Übertragungsvorrichtung (18) das Kontrollsignal übertragen kann.
10. Ein Sicherheits- Kontrollsystem (10) gemäß Anspruch 8 oder 9 das eine Anzeigevorrichtung (24) aufweist und in dem die Überwachungsvorrichtung (32) den Sicherheitszustand eines Gebäudes überwacht, und die Anzeigevorrichtung, zumindest wenn sich das Fahrzeug innerhalb eines vorbestimmten Bereiches um das Gebäude befindet, eine Anzeige des besagten Sicherheitszustandes gibt.
11. Ein Sicherheits- Kontrollsystem (10) gemäß Anspruch 8 oder 9 worin die Überwachungsvorrichtung (32) den Sicherheitszustand eines Gebäudes überwacht und, wenn sich das Fahrzeug innerhalb eines vorbestimmten Bereiches um das Gebäude befindet, und der Sicherheitszustand des Gebäudes verletzt wurde, die Blockierungsvorrichtung (38) die Übertragung des besagten Kontrollsignals blockiert.
12. Ein Sicherheits- Kontrollsystem (10) welches aufweist: einen Sender (18) in einem Fahrzeug, einen Empfänger (28) in einer ortsfesten Installation der, in Reaktion auf ein Signal von dem Sender eine Vorrichtung (30) aktiviert, und Überwachungsmittel (32) welches, wenn es das Stattfinden mindestens eines bestimmten Ereignisses wahrnimmt, die Betätigung des Senders blockiert.

Revendications

1. Un système de contrôle de sécurité (10) qui comprend un moyen de transmission indirecte (18) pour transmettre un signal de contrôle à un récepteur déporté (20, 28, 36), un moyen de surveillance (26, 32) pour surveiller au moins une installation et détecter au moins un événement désigné, un moyen pour produire un signal (22), sensible au moyen de surveillance, pour produire un premier signal lorsqu'un événement est détecté, et un moyen d'inhibition (38), sensible au premier signal, pour invalider la transmission du signal de contrôle.

2. Un système de contrôle de sécurité (10) conformément à la revendication 1 qui comprend un moyen de visualisation (24) pour afficher des informations ayant rapport au moyen de surveillance.

3. Un système de contrôle de sécurité (10) conformément à la revendication 1 ou 2 par lequel le moyen de surveillance (26) surveille un véhicule afin de détecter un accès non autorisé au véhicule ou l'enlèvement non autorisé de l'organe de transmission (18) du véhicule.

4. Un système de contrôle de sécurité (10) conformément à la revendication 1 ou 2 par lequel le moyen de surveillance (26) surveille un véhicule afin de détecter un accès non autorisé au véhicule et, lorsqu'un accès autorisé est détecté, l'organe de surveillance met en activité le moyen de transmission indirecte.

5. Un système de contrôle de sécurité (10) conformément à n'importe quelle revendication de 1 à 4 par lequel le moyen de surveillance (32) surveille un bâtiment afin de détecter l'occurrence d'un événement non autorisé dans le bâtiment.

6. Un système de contrôle de sécurité (10) conformément à n'importe quelle revendication entre 1 et 5 par lequel ledit récepteur déporté (28) est utilisé pour mettre en activité un dispositif (30).

7. Un système de contrôle de sécurité (10) conformément à la revendication 6 par lequel ledit récepteur déporté (28) est utilisé pour mettre en activité le mouvement d'une porte ou d'une grille (30).

8. Un système de contrôle de sécurité (10) conformément à la revendication 1 par lequel le transmetteur indirect (18) est placé dans un véhicule, le récepteur déporté (28) est utilisé pour contrôler l'opération de l'ouverture d'une porte de garage ou d'une grille (30) et l'éventualité désignée est la fermeture des portes du véhicule.

9. Un système de contrôle de sécurité (10) conformément à la revendication 8 ou 9 par lequel, lorsque les portes d'un véhicule sont ouvertes, le moyen de transmission (18) est mis en activité pour que, si besoin est, le transmetteur peut transmettre le signal de contrôle.

10. Un système de contrôle de sécurité (10) conformément à la revendication 8 ou 9 qui comprend un moyen de visualisation (24) et par lequel le moyen de surveillance (32) surveille la condition de sécurité dans un bâtiment, le moyen de visualisation, au moins lorsque le véhicule est à l'intérieur d'une distance prédéterminée du bâtiment, fournissant une

visualisation de ladite condition de sécurité.

11. Un système de contrôle de sécurité (10) conformément à la revendication 8 ou 9 par lequel le moyen de surveillance (32) contrôle le statut de sécurité d'un bâtiment et, lorsque le véhicule est à l'intérieur d'une distance prédéterminée du bâtiment, et si il y a eu une brèche de sécurité, le moyen d'inhibition (38) invalide la transmission dudit signal de contrôle.

12. Un système de contrôle de sécurité (10) qui comprend un transmetteur (18) sur un véhicule, un récepteur (28) installé de façon permanente qui en réponse à un signal du transmetteur, met en activité un dispositif (30), et le moyen de surveillance (32) qui, dès qu'il décèle l'occurrence d'au moins une éventualité désignée, invalide l'opération du transmetteur.

